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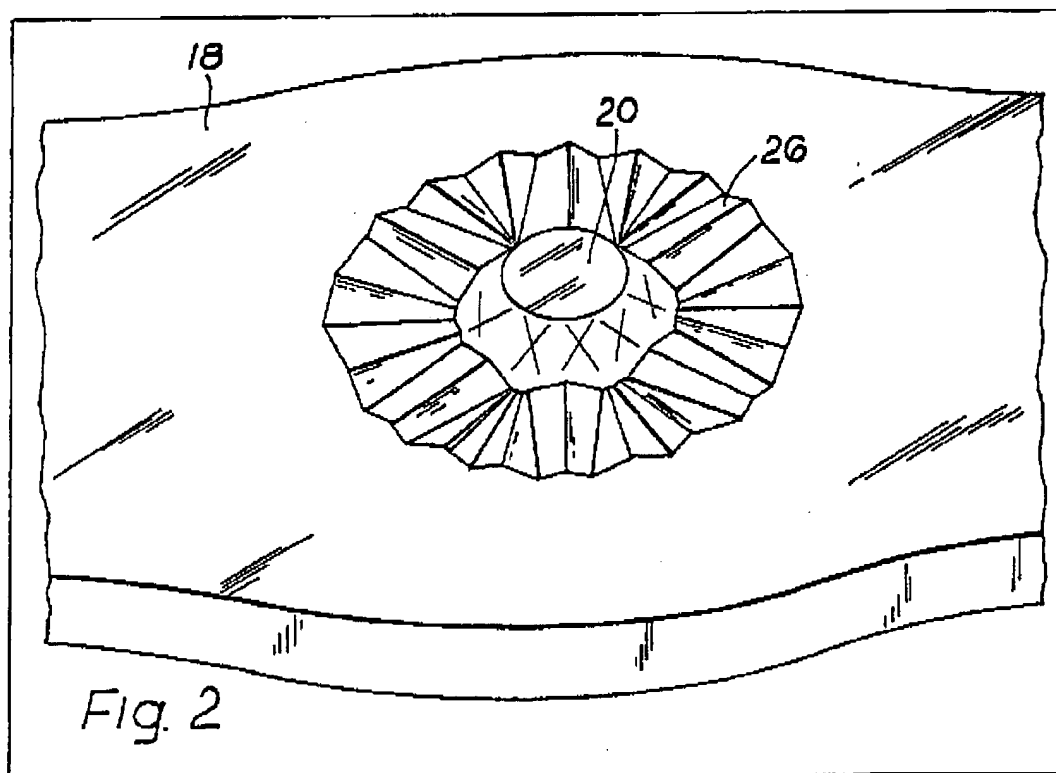
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(54) Setting gems

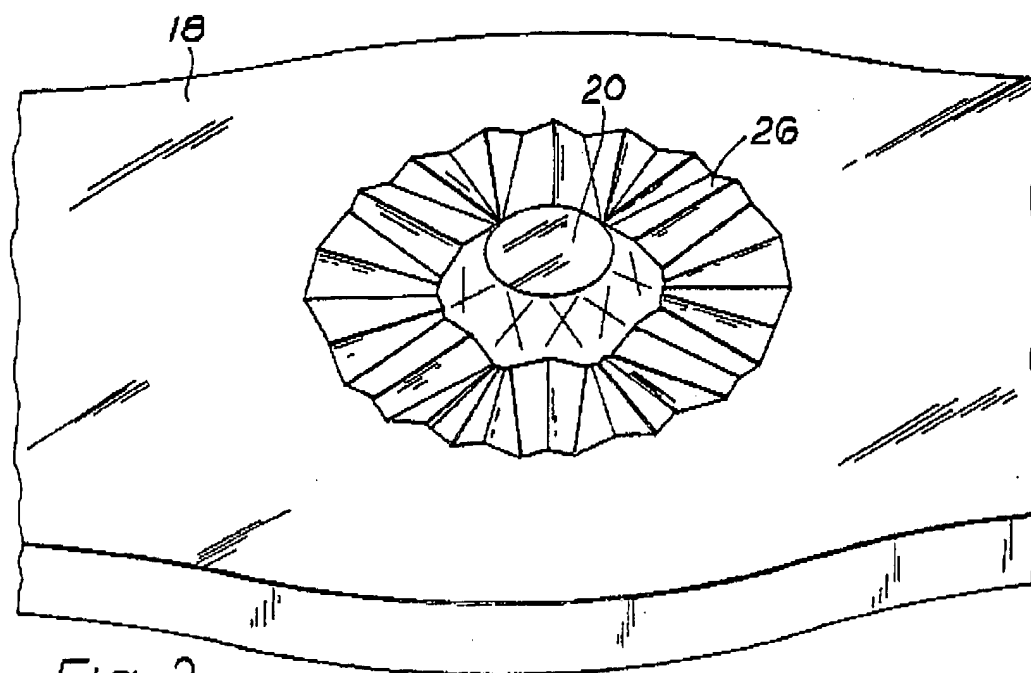
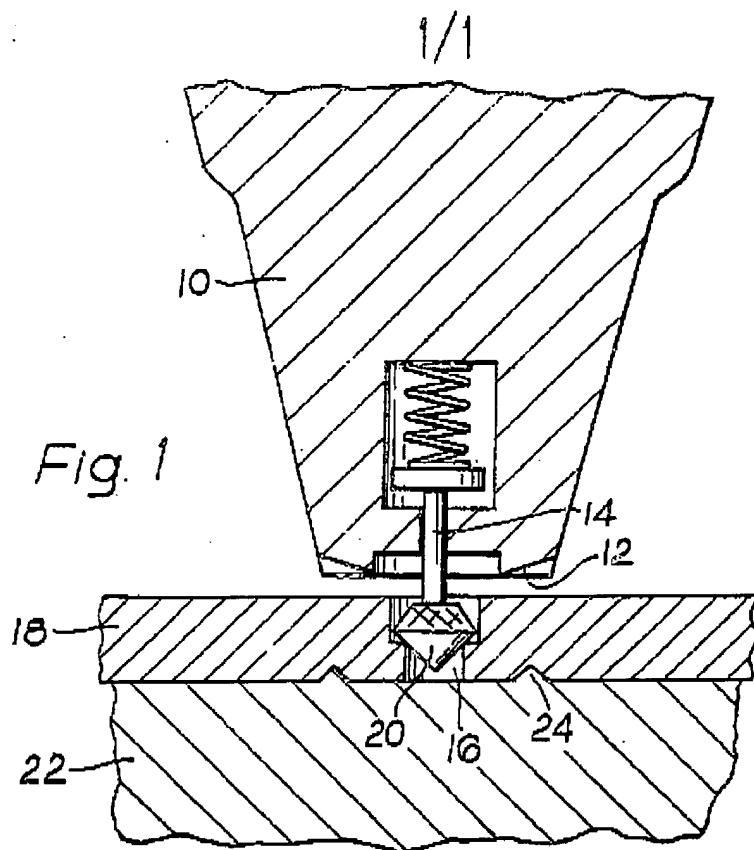
(57) A method of making an illusion gem setting in an article of jewellery includes locating the stone 20 in a bore formed directly in the article and then pressing facets 26 into an annular zone surrounding the stone so as to cause inward flow of metal to grip the stone. Fig. 2 illustrates the assembled stone in a typical article of jewellery.



The drawing(s) originally filed was/were informal and the print here reproduced is taken from a later filed formal copy.

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## SPECIFICATION

## Gem setting

5 This invention relates to gem setting, that is to say the physical securement of precious stones (and like) in articles of jewellery such as rings.

10 The conventional setting method is to form prongs or claws on the body of the article and bend these over to clasp the stone. This is unsatisfactory with small stones.

Patent Application No. 2026303 suggests a method of making an illusion setting, which is particularly suitable for small stones. In an illusion setting, the stone is surrounded by facets cut into the metal, and this gives the impression that the stone is larger than it actually is. According to the application, the claws are deformed around the stone by making them separate from the article and pressing the claws and stone into the centre of the faceted annulus. The claw automatically adjusts to the size of the stone, and the complete assembly can be subsequently attached to the article of jewellery for example by soldering. The assemblies can be mass produced.

A further and as yet unpublished patent application suggests a method of making an illusion setting by placing the stone directly in the metal annulus and dispensing with the claw, and pressing the facets in the annulus whilst confining the outer periphery of the same so that all of the metal flow takes place radially inwardly and grips the stone. This assembly can also be mass produced, and is intended to be soldered to the articles, being simpler and cheaper than the claw method in the said published application.

40 The object of the present invention is to provide yet further improvements.

In accordance with the invention a gem setting method comprises the steps of forming a bore directly in an article of jewellery, the bore opening from the front face of the article and being at least at that face of a size to receive the intended stone, supporting the article on a reaction surface, locating the stone in the bore, and impressing facets into the area immediately surrounding the bore causing flow of metal inwardly of the bore to grip the stone.

It is surprising that the metal flow does occur inwardly of the bore in the absence of a confining die, but this has been found to be the case in the inventor's experiments.

Preferably however the opposite face of the article is formed with an encircling recess, typically in the form of a shallow groove surrounding the bore, and the reaction surface is provided with a rib which is located in the recess during the facetting and setting operation. The rib acts as a confining die and additionally serves to align the article with the

facetting tool which may be mounted in a press. Thus the reaction surface is fixed to the base of the press and the facetting tool to the moving ram of the press.

70 The height of the rib (and the depth of the recess) may be typically about one third or one half the thickness of the material of the article in the vicinity of the bore, and it will be appreciated by those skilled in the art that the thickness is not an indefinite quantity, for it is in fact controlled by a number of factors. In particular, the use of an illusion setting technique implies that small stones are being used and hence the article is to be relatively cheap, and great thicknesses of metal are undesirable in that situation. Further, articles of jewellery intended for personal adornment as rings, earrings and the like are usually of relatively light weight, and if they have a "massive" appearance this is usually simulated rather than real.

The bore may be stepped so that the stone seats on the step or shoulder to control the depth of insertion. Conveniently the bore is formed through the total thickness of the article and is counterbored from the front face to provide the step and with the diameter of the counterbore being selected to seat the intended stone.

95 The tool used to form the facets and cause the metal flow may be a punch with an annular end face and a retractable tip. The tip is dimensioned to be received in the bore so as to align the workpiece with the tool. The annular end face then moves over the tip to form the setting. It will be appreciated that the whole operative end face of the tool is very small. According to a feature of the invention the tool is hardened to the required temper (typically 58 Shore) and subsequently cut with a diamond milling tool. It has been found that the tool faces corresponding to the facets do not need polishing, and the facets cut in the jewellery do not need polishing, if this reversal of the customary tool manufacturing method is employed, (i.e. if the hardened steel is cut to shape, instead of cutting soft steel and subsequently hardening it) and this is advantageous not only in saving a manufacturing step but in giving greater "brilliance" since polishing inevitably rounds the edges of the facets.

The invention therefore provides an extremely economical way of manufacturing jewellery, utilising illusion setting in a way not possible hitherto.

The invention is more particularly described with reference to the accompanying drawings wherein:

125 Figure 1 is a somewhat diagrammatic sectional elevation on an enlarged scale showing the method of the invention being practised; and

Figure 2 is a perspective view on an even larger scale showing a completed setting.

Referring firstly to Fig. 1, it will be seen that the punch 10 has an annular end face 12 cut with facets. The punch has a retractable tip 14 which is spring loaded and aligned with the stone. The inner diameter of the annulus of the end face is of larger diameter than the counterbore 15 so as to avoid the stone being damaged by the facetting. The smaller diameter bore part 16 extends through the total thickness of the article 18 in which the gem stone 20 is being set. The article has a circular groove concentric with the bore on its underface, and the reaction surface or bed of the press 22 is provided with a rib 24 received in that recess.

In the finished article seen in Fig. 2 a series of facets 26 have been pressed into the top face of the article to surround the stone 20, so as to provide the illusion setting, and also because of radial inward deformation or flow of metal from the article, to secure the stone in place.

#### CLAIMS

1. A gem setting method comprising the steps of forming a bore directly in an article of jewellery, the bore opening from the front face of the article and being at least at that face of a size to receive the intended stone, supporting the article on a reaction surface, locating the stone in the bore, and impressing facets into the area immediately surrounding the bore causing flow of metal inwardly of the bore to grip the stone.
2. A method as claimed in Claim 1 wherein the article is formed with a recess encircling the bore and on the opposite face of the article to that which is to be faceted.
3. A method as claimed in Claim 2 wherein the reaction surface is provided with a rib which is located in the recess during the facetting and setting operation.
4. A method as claimed in any preceding claim wherein the height of the rib and the depth of the recess are about one third of the thickness of the material of the article in the vicinity of the bore.
5. A method as claimed in any of Claims 1 to 3 wherein the height of the rib and the depth of the recess are about one half of the thickness of the material of the article in the vicinity of the bore.
6. A method as claimed in any preceding claim wherein the bore is stepped to control the depth of insertion of the stone.
7. A method as claimed in any preceding claim wherein the tool used to form the facets and cause the metal flow is a punch with an annular end face and a retractable tip.
8. A method as claimed in Claim 7 wherein the tool is hardened and subsequently cut with a milling tool to provide tool faces corresponding to the required facets.
9. A method of making an illusion gem setting in an article of jewellery substantially

as described with reference to the accompanying drawing.

10. Apparatus for making an illusion gem setting in an article of jewellery substantially as described with reference to Fig. 1 of the accompanying drawings.

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